Exhibit H

FEASIBILITY STUDY DELPHI AUTOMOTIVE SYSTEMS ROCHESTER OPERATIONS FACILITY 1000 LEXINGTON AVENUE ROCHESTER, NEW YORK

by

Haley & Aldrich of New York Rochester, New York

for

Delphi Corporation Troy, Michigan

File No. 70014-067 20 June 2008



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31 July 2008 File No. 70014-067

Delphi Automotive Systems LLC 1450 West Long Lake Road Mail Code 480-414-460 Troy, MI 48098

Attention:

Mark E. Hester, Esq.

Subject:

Feasibility Study Report

Delphi Automotive Systems LLC Rochester Operations Facility 1000 Lexington Avenue

Rochester, Monroe County, New York

NYSDEC Registry Site #828064 EPA ID No. NYD002215234

Ladies and Gentlemen:

Haley & Aldrich of New York (Haley & Aldich) is pleased to provide the attached Feasibility Study (FS) report for the Delphi Automotive Systems Rochester Operations Facility (Site) located at 1000 Lexington Avenue, Rochester, Monroe County, New York.

The Site is listed as #8-28-064 in the Registry of Inactive Hazardous Waste Disposal Sites in New York State (the Registry). This Feasibility Study was performed in accordance with the terms of the Order on Consent (Order) entered into between Delphi Automotive Systems LLC (Delphi) and the New York State Department of Environmental Conservation (NYSDEC) (Index # B8-0531-98-06) for a Remedial Investigation and Feasibility Study (RI/FS) of the Site.

Sincerely yours,

HALEY & ALDRICH OF NEW YORK

Deens M. Conde

Denis M. Conley Senior Scientist

David J. Hagen, PG Senior Vice President

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CERTIFICATION

This report describes the results of a Feasibility Study (FS) performed for the Delphi Automotive Systems LLC (Delphi) Rochester Operations Facility (Site) located at 1000 Lexington Avenue in Rochester, New York. The Site is listed as #8-28-064 in the Registry of Inactive Hazardous Waste Disposal Sites in New York State. The FS was performed pursuant to an Order on Consent between Delphi and NYSDEC (Index # B8-0531-98-06; effective date, February 4, 2002).

It is hereby certified by Haley & Aldrich of New York that the activities that comprised the FS were performed in accordance with the Department-approved RI/FS Work Plan prepared by Haley & Aldrich of New York and entitled "RI/FS Work Plan, Delphi Automotive Systems, Lexington Avenue Facility, Rochester, New York, Registry Site #828064, EPA ID No. NY D002215234" (October 2001) (as modified by Amendment No. 1 through 5).

Wayne Hardism

Signature:

Name:

Wayne Hardison, P.E. (NY#067080)

Position:

Vice President

Date:

31 July 2008



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EXECUTIVE SUMMARY

This report describes the results of a Feasibility Study (FS) performed at the Delphi Automotive Systems LLC (Delphi) Rochester Operations Facility (Site) located at 1000 Lexington Avenue in the City of Rochester, Monroe County, New York. The Site consists of a 2-million square foot manufacturing building with administrative and engineering offices and numerous smaller buildings used for storage, utility, industrial-wastewater pretreatment and security activities that are related to the manufacturing operations.

Manufacturing processes at the Site have included machining and forming of metal parts, metal tube manufacturing, metal plating, heat treating, die casting, solvent degreasing, injection molding of plastic parts, and the assembly of finished automotive parts and fuel systems. Fuel-systems flow-testing and calibration, engine output testing, and related product engineering and testing operations have also been conducted in the Plant, as have wastewater pre-treatment and steam generation for plant heating.

The FS was performed pursuant to an Order on Consent ("Order"), Index # B8-0531-98-06, between Delphi and the New York State Department of Environmental Conservation (NYSDEC) that became effective upon the execution of the Order by NYSDEC on February 4, 2002.

The Order addressed requirements of NYSDEC Inactive Hazardous Waste Disposal Site Remedial Program (the state "Superfund" program), NYSDEC Industrial Hazardous Waste "Management Program (the state RCRA program), and NYSDEC Petroleum Substance Spills program. Specifically, the Order provides at §I.B that Delphi's performance of the work under the RI/FS Work Plan shall satisfy the NYSDEC RCRA "corrective action" requirements related to the investigation of whether there has been a release of hazardous waste or constituents into the environment from the facility, including a review of the extent of any contamination from a "solid waste management unit" or an "area of concern" as these terms are defined under or utilized in the NYSDEC RCRA program and identification of required remedial alternatives.

The Order specified the development and implementation of a Remedial Investigation (RI) and FS to address the areas of environmental contamination or potential contamination identified at the Site. The RI was performed to determine the nature and extent of contamination, and the FS was performed to identify and recommend a preferred remedial alternative.

The RI report was submitted to NYSDEC in November 2005. NYSDEC provided comments on the RI report in November 2006, and requested additional offsite investigation of the potential extent of groundwater and soil-vapor contamination. The findings of the off-site investigation were submitted to the NYSDEC in August 2007.

Figure 1 presents the location of the Site, which is listed as #8-28-064 in the Registry of Inactive Hazardous Waste Disposal Sites in New York State. Figure 2 presents the nature and extent of contaminated groundwater and soil identified during the RI and additional investigation activities.



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The findings of the RI and additional investigation can be summarized as follows:

Four (4) hydrogeologic units are recognized at the Site, and they can be described as follows:

- Overburden Unit saturated unconsolidated overburden deposits.
- Shallow-Bedrock Unit the overburden-bedrock interface down to the underlying upper seven (7) feet of bedrock.
- Intermediate-Bedrock Unit from approximately 10 feet to 25 feet below the top-of-bedrock surface.
- **Deep-Bedrock Unit** from approximately 30 feet to 65 feet below the top-of-bedrock surface.

Figure 3 presents a cross section of the geologic units identified at the Site during the RI. The overburden, shallow-bedrock and intermediate-bedrock units have been shown to have contaminated groundwater; the deep-bedrock unit has been unaffected. Lateral groundwater flow in the overburden, shallow-bedrock, and intermediate-bedrock units tends toward the north to northeast. Since initiation of groundwater pumping from the migration-control trench system, lateral flow in the shallow- and intermediate-bedrock units in the area north of the migration-control trench along Driving Park Avenue is south toward the trench.

Figures 4 and 5 present the potentiometric surface of groundwater in the overburden/shallow-bedrock and intermediate-bedrock units, respectively, observed under active pumping conditions at the migration control trench. There is a general upward flow gradient from the deep-bedrock unit to the intermediate-bedrock unit.

With respect to the nature and extent of contamination, the RI results indicate the following:

- Site groundwater is impacted with chlorinated volatile organic compounds (cVOC). Contaminated groundwater extends downgradient from the manufacturing building to the northern and slightly beyond the eastern property boundaries. The vertical extent of the contamination is limited to the overburden groundwater bearing unit and the top 25 feet of underlying bedrock.
- Petroleum hydrocarbons are present in the subsurface as light non-aqueous phase liquid (LNAPL) in areas beneath the manufacturing building and beyond the building footprint to the north and east. The LNAPL consists of machining oils used as lubricants during metal-machining operations, and simulated fuels and calibration fluids used in engineering and product-testing operations. In some areas, the LNAPL contains cVOC and polychlorinated biphenyl (PCBs). In the eastern portion of the Site, LNAPL is present in the intermediate bedrock at 10 to 25 feet below the top of bedrock and extends slightly beyond the eastern site boundary.
- Soil and soil vapor are impacted by cVOC beneath the floor slab at the locations of former solvent degreaser systems.
- Soil contamination by metals including chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), mercury (Hg) and zinc (Zn), is present beneath the manufacturing building in



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former metal plating areas and in subsurface soils along the path of the former wastewater drainage ditch located in the north end of the Site.

The Site conditions were evaluated for current and future potential risk to human-health and ecological resources in accordance with applicable New York State and USEPA guidance. The findings of the risk assessment indicate that no unacceptable risks to human health or ecological resources exist under current Site use as an industrial manufacturing facility.

For reasonably anticipated future Site activities (which are those that will occur with continued use as a manufacturing facility), a condition of no risk to human health, public welfare, safety, or the environment exists. However, there is a potential for adverse health effects to temporary utility maintenance/ and temporary construction workers engaged in extended excavation and remediation activities (or other unrestricted Site activities and uses that would result in similar exposure to the identified Site conditions) unless precautionary measures are taken.

Paragraph III.B of the Order noted that Delphi has implemented the following Interim Remedial Measures (IRMs) on the Site ("Ongoing IRMs").

- Groundwater Migration Control, Collection and Treatment System. This system intercepts, collects and treats contaminated groundwater from intermediate bedrock moving downgradient from the manufacturing buildings at the Site.
- LNAPL recovery systems that were implemented in a Tank Farm Area (located at the northeast corner of the manufacturing building at the Site) and in the area of Building 22.
- Soil Vapor Extraction System (Degreaser Investigation Study Area 5)

The ongoing IRMs are continuing in operation and the Order required that they be evaluated during the FS and the remedy selection process to determine if they will be part of the selected remedial alternative for the Site.

To conduct a FS and recommend an appropriate remedy for the identified Site conditions, remedial action objectives (RAO) are established that are protective of human health and the environment. The RAO identify the compounds of concern (COC), the environmental media affected, potential pathways for exposure to the COC, and the Site-specific remediation goals.

The Site-specific remediation goals were developed on the basis of:

- current and potential future uses of the Site,
- complete exposure pathways for ecological and human receptors including potential off-site workers/residents, and
- applicable, relevant, and appropriate requirements (ARAR), including New York State standards, criteria, and guidance (SCG).

General response actions (GRA) are medium-specific actions that must be taken to satisfy the RAO for the Site. The GRA are categorical approaches to remediation that comprise various technologies and process options that may be applicable for the Site. The following GRA have been identified for consideration:



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Soil

- No action
- Institutional Controls (engineering and administrative)
- Containment
- In-situ Treatment
- Excavation and On-site treatment
- Excavation and Off-site Disposal

Groundwater (Dissolved phase)

- No action
- Institutional Controls
- Containment
- Groundwater Collection and Treatment
- In-situ Treatment (including biodegradation and chemical destruction)
- Monitoring

Groundwater (LNAPL Phase)

- No Action
- Institutional Controls
- LNAPL Collection and Off-site Disposal
- In-situ Treatment
- Monitoring

Air (Soil Vapor)

- No action
- Institutional Controls
- Mitigation

Applicable remedial technologies and process options for each GRA are identified and screened for use at the Site based on the following criteria:

- technical implementability.
- ability to achieve the RAO,
- qualified by cost,
- resource impacts.

The recommended remedial alternative is a combination of the following:

- Institutional controls consisting of a deed restriction¹ that will:
 - Prohibit the use of Site groundwater for any purpose without prior review and approval by NYSDEC;
 - Restrict the use of the Site to industrial or commercial operations;
 - Require the use of a NYSDEC-approved Site Management Plan (SMP), for any activities that could potentially involve exposure to COC and provide for

¹ For purposes of the deed restriction, the Site is defined as the Delphi manufacturing facility located on the north side of Lexington Avenue extending to Driving Park Avenue to the north and Mt. Read Boulevard to the west.



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periodic monitoring of groundwater quality; the operation of the existing remedial systems and the levels of LNAPL.

- Continued operation of the groundwater migration-control, collection, and treatment system to capture cVOC impacted groundwater north and east of the manufacturing plant. Primary treatment of the recovered groundwater would be conducted on-site with secondary treatment by Monroe County Pure Waters under existing facility sewer use permits.
- Installation and operation of additional bedrock groundwater recovery wells to enhance the control of dissolved phase groundwater contamination along the eastern property boundary and the occurrence of LNAPL in the eastern parking lot.
- Continued operation of LNAPL recovery systems in the tank farm area located east of the manufacturing building. Recovered LNAPL and groundwater would receive primary treatment using the on-site wastewater pre-treatment system. The recovered LNAPL would be sent to a licensed off-site facility for reclamation or fuel blending. The groundwater would be discharged and receive secondary treatment by Monroe County Pure Waters under existing facility sewer use permits.
- Continued operation of the LNAPL-recovery system installed in the Building 22 area. The recovered LNAPL would be containerized and disposed off-site at a Treatment Storage and Disposal Facility (TSDF) permitted to receive, treat and dispose of waste containing PCBs. Recovered groundwater would be blended with groundwater from the migration control trench for subsequent treatment.
- Additional LNAPL recovery consisting of the manual removal of LNAPL from existing wells installed in the former UST A area east of Building 1, near the Machining Oil Recovery basement adjacent to well R-309 and in the CWTA courtyard area north of Building 2. This additional LNAPL removal would be coordinated with the facility to minimize disruption of manufacturing operations.
- Mitigation methods would be used to limit the potential migration of VOC impacted soil vapor into the manufacturing plant from the subsurface. These technologies would include the following methods:
 - Floor sealants to restrict diffusion of soil gas through the facility floor and expansion joints.
 - HVAC system operation and management to minimize the potential for soil vapor intrusion. The operation and maintenance of the facility HVAC system will be implemented and monitored by Delphi personnel.
 - Periodic Inspection/Air Quality Monitoring to evaluate HVAC system performance, including periodic inspection and indoor air quality testing.

The capital and operation and maintenance (O&M) cost estimate for the recommended remedial alternative was developed using the Remedial Action Cost Engineering and Requirements System (RACER™) 2006 (version 8.1.2*). RACER™ is a parametric cost estimating system using cost databases derived from the Army Corps of Engineers Unit Price Book supplemented from similar databases.



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The net present value (NPV) of the recommended remedial alternative based on the capital and 0&M costs supplied by RACERTM (using a 3% discount rate) is \$9.1 million.



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9. EVALUATION OF ALTERNATIVES AND RECOMMENDED REMEDY

In this section, the alternatives developed in the previous section will be subjected to a detailed evaluation that will allow for the development of a recommended remedial alternative for the Site.

9.1 Criteria for the Evaluation of Alternatives

Each technology was evaluated using the following seven (7) evaluation criteria:

- Compliance with ARAR including NYS Standards, Criteria, and Guidance (SCG);
- Overall protection of human health and the environment;
- Short-term impacts and risks:
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume;
- Implementability; and
- Cost.

9.2 Basis of Design for the Alternatives

The basis of design for the alternatives and assumptions used to develop the costs that were evaluated herein are presented in Table V.

The capital and operations and maintenance (O&M) cost estimates for each remedial alternative were developed using the Remedial Action Cost Engineering and Requirements System (RACER™) 2006 version 8.1.2° software package. RACER™ is a parametric cost estimating system, which uses Site-specific information to generate Site-specific cost estimates for each process or technology.

The cost estimates are developed using cost databases derived from the Army Corps of Engineers Unit Price Book supplemented from similar databases. RACER™ also provides cost estimates of sampling and analysis, remedial action professional labor, contractor general conditions, contractor overhead and profit, and remedial design based on the process or technology and the Site COC.

The cost estimates also reflect the engineering design for implementation of the process or technology based on similar project case histories and engineering assumptions. The following section provides a detailed evaluation of each remedial alternative that uses the net present value (NPV) cost of each alternative as qualifying criteria.

A summary of the costs used to develop an opinion of the probable NPV cost of the alternatives is presented in Table VI. A detailed summary of the elements of each cost estimate is provided in Appendix E.



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9.3 Soil Alternatives

9.3.1 Alternative S1 - No Action

In the no action alternative, contaminated soils would be left in place.

<u>Compliance with ARAR/SCG</u>: This alternative would not provide compliance with current chemical-specific SCG or with contaminant removal/depletion objectives.

Overall Protection of Human Health and the Environment: No Action in these areas is considered effective because the findings of the risk assessment indicate that no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future use of the Site as an industrial manufacturing facility.

Short Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no short term impacts to the community, environment or workers.

Long Term Effectiveness and Permanence: Because no unacceptable risks to human health and the environment were identified in association with exposures to soil, this alternative is effective as long as exposure to contaminated soils is controlled through the implementation of a NYSDEC-approved Site Management Plan.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction, treatment, or containment, of Site COC. Therefore, the mobility and volume of the COC will remain unaffected.

Implementability: The No Action alternative is easily implemented compared to all other alternatives.

<u>Cost</u>: This alternative (and the No Action alternatives for other media) has no cost for the purpose of comparison to other alternatives.

9.3.2 Alternative S2 – Institutional Controls

Institutional controls include governmental actions such as land use restrictions through zoning and prohibition of groundwater use by the City of Rochester, an environmental easement approved as to form by NYSDEC and a recorded deed restriction that limits the Site to commercial and industrial uses, requires the development and use of a Site Management Plan for the management of Site activities that could result in exposure to the COC and provides for access controls such as fencing and security measures for the prevention of direct contact with contaminated soil.

In the event that the existing facility security system, fence and access controls were removed, permanent fences with hazard signs would be installed around outdoor areas that are not currently paved or covered by building floors.

Compliance with ARAR/SCG: This alternative would not provide compliance with chemical-specific SCG or with contaminant removal/depletion objectives.



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Overall Protection of Human Health and the Environment: Institutional Controls are considered effective because the findings of the risk assessment indicate that no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses of the Site as an industrial manufacturing facility.

Short Term Impacts and Effectiveness: Maintenance of permanent fencing and hazard signs would restrict access to contaminated areas. This activity does not carry significant risks for the community, environment, or workers.

<u>Long Term Effectiveness and Permanence</u>: This alternative would be adequately and reliably protective over the long term. Monitoring of administrative controls with periodic reporting of status to governmental agencies will be required.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction or treatment of Site COC. Therefore, the mobility and volume of the Site COC will remain unaffected except for the reduction and attenuation resulting from intrinsic processes.

<u>Implementability</u>: Implementation could result in a minor long-term increase in workload for facility grounds maintenance crews as a result of the installation and maintenance of fencing and security systems. However, no technical or administrative difficulties are anticipated, and this alternative is administratively implementable.

Cost: The Net Present Value (NPV) cost for this alternative for the development and implementation of the NYSDEC-approved Site Management Plan and implementation of the long-term groundwater and sewer monitoring program is \$2.68 million.

9.3.3 Alternative S3 - Excavation and off-site Disposal

This alternative assumes the removal of contaminated soils from ground surface to the top of bedrock throughout the Site. This remedial technology would be implemented where the facility operations were terminated and the asphalt parking lots, and concrete floors of the facility were removed.

For the purposes of this evaluation, one third (33%) of the excavated soils have been assumed to be transported and disposed of off-site as hazardous waste, one third as non-hazardous petroleum impacted waste (33%) and one third (33%) would be reused on-site as backfill.

<u>Compliance with ARAR/SCGs</u>: Chemical-specific SCGs and contaminant removal/depletion objectives for soil would be met.

Overall Protection of Human Health and the Environment: This alternative would be protective of human health and the environment. The findings of the risk assessment indicate that unacceptable risks to human health are posed to temporary construction/maintenance workers during utility maintenance and excavation activities without the application of appropriate precautions. Removal of overburden soils would mitigate this risk.

Short Term Impacts and Effectiveness: Implementation of this alternative would generate short term risks for the community. The risks are associated with fugitive dust and volatile emissions and traffic risks from the removal of the soils. The alternative also includes similar



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risks to workers involved in the excavation and removal of soils. These risks can be managed with proper engineering controls.

<u>Long Term Effectiveness and Permanence</u>: Excavation is considered a permanent remedy for the Site but it does not treat the contaminated soil as it would be transported to another location.

Reduction of Toxicity, Mobility, and Volume: This alternative provides for a reduction in volume and mobility of Site COC by removing contaminated soils from the Site. No waste is treated in this remedy, and toxicity is therefore not reduced.

<u>Implementability</u>: Implementation of this alternative has uncertainties and difficulties as compared to other alternatives. Excavation is reliable in meeting performance goals for overburden soils, but access problems will limit the implementability unless operations cease and the facility is de-commissioned. Coordination with regulatory agencies would be required.

Cost: The estimated NPV cost for this alternative exceeds \$58 Million.

9.4 Groundwater (Dissolved Phase) Alternatives

9.4.1 Alternative GW1 - No Action

The No Action alternative applies to groundwater impacted with Site COC beneath the East and North Parking Lots in the overburden, shallow and intermediate bedrock.

<u>Compliance with ARAR/SCGs</u>: This alternative would not provide compliance with current chemical-specific SCGs or with contaminant removal or depletion objectives.

Overall Protection of Human Health and the Environment: No Action in all areas is considered effective because no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses at the Site as an industrial manufacturing facility.

Short Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no short term impacts to the community, environment or workers.

<u>Long Term Effectiveness and Permanence</u>: This alternative is effective as long as groundwater is not used without prior NYSDEC approval.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction, treatment, or containment, of Site COC. Therefore, the mobility and volume of the COC will remain unaffected.

<u>Implementability</u>: The No Action alternative is easily implemented compared to other alternatives.

<u>Cost</u>: This alternative (and the No Action alternatives for other media) would have No Cost for the purpose of comparison to other alternatives.



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9.4.2 Alternative GW2 - Institutional Controls

Institutional actions include governmental actions such as land use restrictions through zoning and prohibition of groundwater use by the City of Rochester, an environmental easement approved as to form by NYSDEC and a recorded deed restriction that limits the future development and use of the Site, requires the use of a Site Management Plan for Site activities that could result in exposure to the COC and provides for access controls such as fencing and security measures. This alternative will include the periodic monitoring of groundwater quality as part of the SMP.

<u>Compliance with SCGs</u>: This alternative would not provide compliance with chemical-specific SCGs or with contaminant removal or depletion objectives.

Overall Protection of Human Health and the Environment: Institutional Controls in all areas are considered effective because no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses of the Site.

Short Term Impacts and Effectiveness: Groundwater sampling would involve manageable risks for the community, environment, or workers including the groundwater sampling crews.

Long Term Effectiveness and Permanence: This alternative would be reliably because in addition to the prohibition provided by the City ordinance and the deed restriction, the groundwater quality monitoring will permit periodic assessment of the effectiveness of the alternative.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide additional destruction, treatment, or containment, of Site COC beyond that which is occurring as a result of the natural attenuation of contaminants in groundwater. The mobility and volume of the COC will not be reduced beyond the degree to which the reduction is occurring due to these intrinsic processes.

<u>Implementability</u>: No technical or administrative difficulties are anticipated, and this alternative is easily implemented.

<u>Cost</u>: The NPV cost of this alternative includes the preparation of the Site Management Plan and the related long-term monitoring program is provided in Alternative S2.

9.4.3 Alternative GW3 - Groundwater Recovery and Treatment (Existing IRM)

This alternative includes the operation of the migration control system IRM in the North Parking Lot with groundwater treatment using the existing pre-treatment system. This alternative will reduce the mobility and volume of contaminants.

Compliance with ARAR/SCGs: Groundwater remediation objectives will not be met by this alternative even after an extended period of operation (>30 years). Discharge permit renewal and compliance would be required.

Overall Protection of Human Health and the Environment: This alternative would be protective of human health and the environment because no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated



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future uses of the Site. Environmental receptors would be protected as the groundwater would be treated to meet the discharge permit requirements of the Monroe County POTW.

Short Term Impacts and Effectiveness: Since no new construction will be required, no short term risks will be generated by the implementation of this alternative.

Long Term Effectiveness and Permanence: This alternative includes permanent and non-reversible removals and destruction of COC by the recovery and treatment systems. This alternative provides some effectiveness against future contact with contaminated media. The majority of the waste is treated on-site, and the treated residuals would be discharged off-site in accordance with a Monroe County POTW sewer use permit.

Reduction of Toxicity, Mobility, and Volume: The toxicity, mobility, and volume of Site COC would be reduced by this technology. Concentrated waste streams would be generated as part of this remedy (i.e. wastewater sludge) that will require proper management.

<u>Implementability</u>: Since no new construction is required for the Alternative and operation is on-going.

<u>Cost</u>: Based on an assumed groundwater recovery rate of 20 gallons per minute, the Net Present Value (NPV) of this alternative is approximately \$ 2.26 million.

9.4.4 Alternative GW4 - Enhanced Groundwater Recovery and Treatment

This alternative includes the installation and operation of additional recovery wells to augment the existing migration control system IRM in the North Parking Lot. Groundwater treatment would be achieved using the existing pre-treatment system. This alternative will reduce the mobility and volume of contaminants.

Compliance with ARAR/SCGs: Groundwater remediation objectives will not be met by this alternative even after an extended period of operation (>30 years). Discharge permit renewal and compliance would be required.

Overall Protection of Human Health and the Environment: This alternative would be protective of human health and the environment because no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses of the Site. Environmental receptors would be protected as the groundwater would be treated to meet the discharge permit requirements of the Monroe County POTW.

Short Term Impacts and Effectiveness: Since new construction will be required, short term risks will be generated by the implementation of this alternative. Short term risks will include potential exposure to fugitive dust and volatile emissions and traffic risks during the installation of the recovery wells and transfer piping. The alternative also includes similar risks to workers at the facility and risks of injury to the workers involved in the construction activities. These risks can be managed with proper engineering controls.

Long Term Effectiveness and Permanence: This alternative includes permanent and non-reversible removals and destruction of COC by the recovery and treatment systems. This alternative provides some effectiveness against future contact with contaminated media. The



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majority of the waste is treated on-site, and the treated groundwater discharged off-site in accordance with a Monroe County POTW sewer use permit.

Reduction of Toxicity, Mobility, and Volume: The toxicity, mobility, and volume of Site COC would be reduced by this technology. Concentrated waste streams would be generated as part of this remedy (i.e. wastewater sludge) that will require proper management.

<u>Implementability</u>: New construction is required for the Alternative but can be implemented with proper design and engineering controls and groundwater treatment capacity operation is available for this alternative and is implementable without additional permit requirements.

<u>Cost</u>: Based on an assumed groundwater recovery rate of approximately 6 gallons per minute, the Net Present Value for the installation and operating cost for a period of 30 years for this alternative is approximately \$1.2 million.

9.5 Groundwater (LNAPL Phase) Alternatives

9.5.1 Alternative L1 - No Action

No Action for LNAPL is used as a baseline alternative for comparison to other Site COC. Therefore, the mobility and volume of the COC will alternatives. As with the no-action alternative applied to soil and groundwater (dissolved Phase), the no-action alternative applied to groundwater (LNAPL Phase) contamination would not address the contaminant reduction or depletion objective.

Compliance with ARAR/SCGs: This alternative would not provide compliance with current chemical-specific SCGs or with Site COC depletion objectives.

Overall Protection of Human Health and the Environment: No Action in all areas is considered effective because no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses at the Site.

Short Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no short term impacts to the community, environment or workers.

<u>Long Term Effectiveness and Permanence:</u> This alternative is effective as long as LNAPL areas are not disturbed by sub-surface activities except in accordance with a NYSDEC-approved SMP.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction, treatment, or containment.

<u>Implementability</u>: The No Action alternative is easily implemented compared to other alternatives.

<u>Cost</u>: This alternative (and the No Action alternatives for other media) would have No Cost for the purpose of comparison to other alternatives.



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9.5.2 Alternative L2 - Institutional Controls

Institutional actions for the prevention of direct contact with the LNAPL phase of contaminated groundwater include governmental actions such as land use restrictions through zoning and prohibition of groundwater use by the City of Rochester, an environmental easement approved as to form by NYSDEC and a recorded deed restriction that limits the future development and use of the Site, requires the use of a Site Management Plan for Site activities that could result in exposure to the COC and provides for access controls such as fencing and security measures.

This alternative is combined with alternative S2 and GW2 and applies to occurrences of LNAPL in the same areas as the no action alternative.

Compliance with ARAR/SCGs: This alternative would not provide compliance with current chemical-specific SCGs or with Site COC depletion objectives.

Overall Protection of Human Health and the Environment: No Action in all areas is considered effective because no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses at the Site.

Short Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no short term impacts to the community, environment or workers.

Long Term Effectiveness and Permanence: This alternative is effective as long as LNAPL areas are not disturbed by sub-surface activities.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction, treatment, or containment, of Site COC. Therefore, the mobility and volume of the COC will remain unaffected other than that which is attained through intrinsic processes (i.e. natural attenuation).

Implementability: This alternative is easily implemented compared to other alternatives.

<u>Cost</u>: The NPV cost of this alternative is part of the Site Management Plan and the related long-term monitoring program included in Alternative S2.

9.5.3 Alternative L3 -LNAPL Recovery and Treatment (Existing IRM)

This alternative includes the continuation of LNAPL recovery and treatment systems operated in the Tank Farm and Building 22 areas. The extraction wells would continue to be equipped with pump systems that recover aqueous and non-aqueous liquids for treatment and/or disposal. This alternative could be implemented in a manner that is protective of human health and is considered effective.

Compliance with ARAR/SCGs: This alternative addresses the RAO of contaminant removal or depletion but will not achieve the ARARs or SCGs. It is likely that considerable residual Site COC will remain after this alternative has been implemented to the maximum extent practicable.



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Treatment and disposal of the recovered material would be managed under additional permit requirements for transportation and treatment and/or disposal off-site (NYSDOT; RCRA TSDF).

Overall Protection of Human Health and the Environment: This alternative would be protective of human health and the environment as no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses of the Site.

Short Term Impacts and Effectiveness: No new construction would be required for this alternative, so no short term risks would be generated by this alternative.

<u>Long Term Effectiveness and Permanence</u>: This alternative is an effective remedy for removal of Site COC because it includes permanent and non-reversible removal of contaminants and destruction by off-site treatment and/or disposal facilities.

Reduction of Toxicity, Mobility, and Volume: The toxicity, mobility, and volume of Siterelated COC would be reduced by this alternative. Concentrated waste streams would be generated as part of this remedy that will require special handling.

<u>Implementability</u>: No interference with current manufacturing operations is likely from this alternative and is fully implementable.

Cost: The Net Present Value for continued operation of this remedial alternative for a period of 30 years is approximately \$1.85 million.

9.5.4 Alternative L4 - Enhanced LNAPL Recovery (Free-Product)

Enhanced LNAPL recovery entails the manual recovery of LNAPL for existing monitoring wells installed within the overburden, shallow- and intermediate bedrock units across the Site to selectively remove LNAPL. This alternative could be implemented in a manner that is protective of human health and is considered effective.

Compliance with ARAR/SCGs: This alternative addresses the RAO of contaminant removal or depletion but will not achieve the ARARs or SCGs. It is likely that considerable residual Site COC will remain after this alternative has been implemented to the maximum extent practicable. Handling of the recovered material would be managed under additional permit requirements for transportation and treatment and/or disposal off-site (NYSDOT; RCRA TSDF).

Overall Protection of Human Health and the Environment: This alternative would be protective of human health and the environment as no unacceptable risks to human health or ecological resources are posed by the Site COC given the current and anticipated future uses of the Site.

Treatment and disposal of the recovered materials would be conducted in compliance with a sewer use permit with the Monroe County POTW (for oily wastewater) and/or the off-site RCRA TSDF permit for the recovered non-aqueous phase materials.



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Short Term Impacts and Effectiveness: Construction of this alternative will generate short term risks related to the development of the proper storage and handling of the recovered LNAPL. Proper engineering controls can manage these risks and would not significantly impact the community, the environment or facility workers.

<u>Long Term Effectiveness and Permanence</u>: This alternative is an effective remedy for removal of Site COC because it includes permanent and non-reversible removal of contaminants and treatment of Site COC at off-site treatment facilities.

Reduction of Toxicity, Mobility, and Volume: The toxicity, mobility, and volume of Siterelated COC would be reduced by this alternative. Concentrated waste streams would be generated as part of this remedy that will require special handling.

<u>Implementability</u>: Interference with manufacturing operations is likely during the recovery of LNAPL from monitoring wells located within the facility, and the creation LNAPL satellite storage areas. These implementation restrictions could be managed and should not limit the effectiveness of the alternative.

<u>Cost</u>: The NPV cost of this remedial alternative is estimated to be approximately \$0.36 million.

9.6 Air (Soil Vapor)

9.6.1 Alternative SV 1 - No Action

This alternative assumes that the indoor air quality is consistent with the results of testing conducted as part of the RI additional investigation activities. The results of that study indicated that there were no potential for adverse health effects from the levels of Site COC present in the indoor air at the Site.

Compliance with ARAR/SCGs: This alternative provides compliance with current chemical-specific SCGs.

Overall Protection of Human Health and the Environment: No Action in all areas is considered effective because no unacceptable risks to human health are posed by the Site COC given the current and anticipated future uses at the Site.

Short Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no short term impacts to the community, environment or workers.

<u>Long Term Effectiveness and Permanence</u>: This alternative is effective as long as contaminated areas currently covered by the manufacturing building are not disturbed or the operation of the current HVAC system is not altered.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction, treatment, or containment, of Site COC. Therefore, the mobility and volume of the COC will remain unaffected.

<u>Implementability</u>: The No Action alternative is easily implemented compared to other alternatives.



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<u>Cost</u>: This alternative (and the No Action alternatives for other media) would have No Cost for the purpose of comparison to other alternatives.

9.6.2 Alternative SV 2 - Engineering Controls

This alternative would include operation and maintenance of the facility HVAC system to preclude soil-vapor intrusion. This alternative will be implemented and monitored by Delphi personnel as part of the normal facility operations. Alternative SV 2 will also include periodic inspection of the facility floor slab and HVAC system as part of a monitoring and reporting performed under the SMP, with periodic indoor air quality testing to document facility conditions.

Compliance with ARAR/SCGs: This alternative provides compliance with current ARARs and chemical-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative is considered effective because no unacceptable risks to human health are posed by the Site COC given the current and anticipated future uses at the Site.

Short Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no short term impacts to the community, environment or workers.

<u>Long Term Effectiveness and Permanence</u>: This alternative is effective as long as the operation of the current HVAC system is continued.

Reduction of Toxicity, Mobility, and Volume: This alternative does not provide destruction, treatment, or containment, of Site COC. Therefore, the mobility and volume of the COC will remain unaffected.

<u>Implementability</u>: This alternative is implementable with recordkeeping and reporting of the HVAC system operational conditions.

Cost: The NPV cost for this alternative is estimated to be approximately \$0.30 million.

9.7 Synthesis and Comparison of Alternatives

This analysis involves a comparison of the alternatives to determine which combination of alternative meets the RAO for the Site conditions.

No Action

No-action alternative S1/W1/L1/SV1, Site COC would not be removed or treated to a level that meets the chemical-specific SCGs or contaminant removal/depletion objectives. However, the HHERA demonstrates that the No-action alternative would, at minimal cost, be protective of human health and the environment for current and anticipated future uses of the Site.



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Institutional Controls

Alternative S2/W2/L2/SV2 is incrementally more effective than the No-Action alternative because it adds monitoring to confirm that Site use and access protections are being maintained and it includes groundwater monitoring where impacts have been identified. The various elements of the institutional controls for the Site would be specified in a Site Management Plan (SMP) that would be submitted to NYSDEC for review and approval.

This alternative includes provisions for periodic Site inspections and assumes that groundwater monitoring would be conducted for a period of 30 years. The costs of implementing this alternative include inspection and maintenance of existing infrastructure.

Annual sampling and reporting frequency was used for the purposes of estimating probable costs; however, it is anticipated that the frequency and scope of activities required would change over time. (For example, a 5-year monitoring frequency or discontinuation of groundwater monitoring at some locations could be approved if plume stability is demonstrated or contaminant concentrations decline.)

The Institutional Control alternative also incorporates operation and maintenance of a HVAC system. Indoor air testing has shown soil vapor intrusion is not occurring. However, NYSDOH regulatory guidance, which is designed to address potential exposures in residential settings, recommends periodic monitoring if a soil vapor source exists beneath a structure. Thus, this alternative includes indoor air quality testing as part of the SMP.

Enhanced Groundwater Recovery and Treatment

Alternative GW3/GW4, the enhanced groundwater recovery and treatment alternative will reduce the concentration and reduce the volume of dissolved cVOC contamination at the Site. Chemical-specific SCG for off-site groundwater would be met but the on-site dissolved -phase contamination will likely remain. This alternative assumed the expansion of the groundwater migration control system with the addition of two (2) bedrock groundwater recovery wells located to the south of the existing interceptor trench system with an increase in the combined groundwater recovery system by approximately 25% (6 gallons per minute).

Enhanced LNAPL Recovery

Alternative L3/L4 will efficiently and cost effectively addresses the contaminant removal/depletion objective since the RI data indicates that the highest concentration of Site COC is contained within the groundwater LNAPL phase. However, even if the alternative is implemented successfully, it is likely that the Site COC will remain within the bedrock matrix.

Recovery methods that selectively recover LNAPL will decrease the total cost of operation by minimizing the cost of treatment of recovered groundwater. The uncertainty over the potential effectiveness of this (or any) remedial alternative and the ability to maintain a sustainable recovery of LNAPL from the bedrock matrix, the existing wells used for recovery purposes should be selected through the use of pilot testing activities and observations of LNAPL mobility. The implementation of the alternative should be undertaken in phases to optimize equipment utilization and limit the impact to facility operations.



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9.8 Recommended Remedial Alternative

The net present value (NPV) of probable cost of the recommended alternative is \$ 9.1 million. A summary of the estimated cost of the recommended remedial alternative is presented in Table VI. Remedial technology specific detailed cost estimates are provided in Appendix E.

The recommended remedial alternative for the Site consists of the following components:

Alternative S2/GW2/L2: Implementation of the institutional controls to address soil, groundwater, and soil vapor contamination. The institutional controls would consist of restrictions that will:

- prohibit the use of Site groundwater for any purpose without prior review and approval by NYSDEC;
- restrict the use of the Site to industrial or commercial operations;
- require the use of a NYSDEC-approved Site Management Plan (SMP) for any activities that could potentially involve exposure to COC;
- provide for periodic monitoring of groundwater quality; the operation of existing remedial systems and the levels of LNAPL.

Periodic reports would include evaluation of the continuing protectiveness of this alternative and the need for additional measures. The scope of initial inspection and monitoring would be specified in the SMP, and the SMP would be updated as appropriate over time in response to inspection and monitoring results.

Alternative L3/L4: Phased implementation of LNAPL recovery. LNAPL recovery would continue in the Building 22 and Tank Farm areas and additional LNAPL recovery methods would be implemented in a manner allowing for continued facility manufacturing operations in the areas affected by LNAPL. The implementation process will be coordinated with the facility to minimize potential disruption of manufacturing operations.

The initial phase would consist of manual removals of LNAPL from existing monitoring wells installed in the former UST A area east of Building 1, near the Machining Oil Recovery basement adjacent to well R-309 in Building 1, and in the CWTA courtyard area north of Building 2. Expanded implementation would follow in phases to address other areas in Building 1 and 2.

Alternative GW3/GW4: The continued operation of the Groundwater Migration Control systems with the addition of additional recovery wells. This alternative will reduce the concentration of Site COC in groundwater and reduce the volume of dissolved cVOC contamination while meeting the Chemical-specific SCGs for groundwater at the property boundaries. The operation of the current migration control systems in concert with the recovery of LNAPL containing cVOC interior to the Site will reduce the mass flux of dissolved phase contaminants. Expansion of the groundwater migration control system will require the installation of at least two (2) bedrock groundwater recovery wells north of the Eastern Parking Lot.



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Alternative SV 2: Coordination and management of the facility HVAC system to minimize the potential of soil vapor intrusion. The operation and maintenance of the facility HVAC system to preclude the intrusion of soil-vapor will be implemented and monitored by Delphi personnel.

Alternative SV 2 includes periodic inspection of the building floor slab and HVAC system operation as part of the monitoring and reporting performed under the SMP, with provisions for indoor air quality testing.



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